

deposit, we must take into account not only its purity, but also the size of the diatomaceæ it contains; thus, M. Gobi recommends especially those deposits which contain mostly frustules from the species of *Epithemia*, *Navicula*, *Synedra*, and *Melosira*, their frustules being of a greater size and more porous than those of the *Fragillaria*, *Cocconeis*, *Nitzschia*, &c. As to the use of pounded coal or bricks, and of sand, it ought to be quite given up.

At the Annual Meeting of the Davenport (U.S.) Academy of Sciences on January 6 a very satisfactory report was given of the condition of the Society and of the good work it is doing. The president gave an address, in which he sketched the progress which has been made in a knowledge of the Mound Builders, the prehistoric people of the Mississippi Valley, to whose remains the Academy has all along devoted special attention.

A SMALL well-printed *in memoriam* volume on the late Prof. Benjamin Peirce has been issued at Cambridge, Mass. It consists of the various notices, poems, addresses, &c., that appeared in consequence of his death, including three funeral sermons.

The third Annual Report of the Dulwich College Science Society speaks hopefully of its condition. The Society has been steadily progressing, and has already collected a museum "which would do credit to many an older society." The Report contains abstracts of several of the papers and lectures given during the year.

AN encouraging Annual Report (the forty-seventh) has been sent us from the York School Natural History Society; all its sections have evidently been doing well. In connection with this we are glad to notice that, under the title of the *Natural History Journal and School Reporter*, the journal conducted by the Societies in Friends' Schools has assumed a new and more attractive form, at the same time that its programme has been somewhat extended. The two numbers for February and March contain some creditable original papers.

A SECOND edition of Mr. W. C. Wyckoff's "Silk Goods of North America" has been published; the first edition was noticed in NATURE, vol. xx. p. 574.

THE additions to the Zoological Society's Gardens during the past week include a White-fronted Capuchin (*Cebus albifrons*) from South America, presented by Mr. C. Drake Sewell; a Ring-tailed Coati (*Nasua rufa*) from South America, presented by Mrs. Fuller; a Common Badger (*Meles taxus*), British, presented by Mr. Rooke; a Black-winged Peafowl (*Pavo nigripennis*) from Cochin China, presented by Mr. J. Marshall; a Rough-eyed Cayman (*Alligator sclerops*) from South America, presented by Mr. Arthur C. Ponsonby; a Horrid Rattlesnake (*Crotalus horridus*) from Brazil, presented by Mr. C. A. Craven; a Jararaca (*Trigonocephalus atrox*) from Brazil, presented by Dr. A. Stradling, C.M.Z.S.; a Macaque Monkey (*Macacus cynomolgus*) from India, deposited; a Goral Antelope (*Nemorhædus goral*), two Bar-headed Geese (*Anser indicus*) from India, purchased; a Javan Chevrotain (*Tragulus javanicus*) from Java, a Red Bird of Paradise (*Paradisæa sanguinea*), a Twelve-wired Bird of Paradise (*Seleucidus albus*), a Manucode (*Manucodia atra*) on approval.

### OUR ASTRONOMICAL COLUMN

THE SOLAR PARALLAX.—In a communication to the Academy of Sciences of Paris on the 7th inst., M. Puiseux has discussed the observations of internal contacts during the last transit of Venus, which were made at stations occupied by the French expeditions. These include observations of second and third contacts at Pekin, St. Paul, Nagasaki, Saigon, and Kobé, and of second contact at Noumea. Seventeen equations are furnished by these data, and various combinations are made by Halley's method and by the method of Delisle. The former

method supplies twelve separate results, the concluded parallaxes varying from 8".78 to 9".17, which are arranged according to the amount of the parallax factor: the simple arithmetical mean is 8".98. On Delisle's method the combinations for second contact give fourteen values between 8".86 and 9".20, of which the mean is 9".01, and those for third contact furnish ten values between 8".63 and 8".90—the mean being 8".92. These figures considered with respect to others which have been obtained from observations of the same transit and on other methods, cannot be said to enlighten us materially as to the true amount of the sun's mean parallax. M. Puiseux thinks the observations of contact in 1874 have not given results so accordant as astronomers had looked for, but he nevertheless is far from discouraging efforts to secure observations of contacts in 1882; the phenomena in 1874 did not present that geometrical simplicity which had been formerly expected, but presented a succession of phases which were the more difficult to identify in the records of the observers according as the telescopes employed were more dissimilar; and he urges (1) that the different stations should be provided with telescopes of large aperture, to be employed under as identical circumstances as practicable, and (2) that the observers should be exercised "à l'aide d'appareils convenables," to appreciate in the same manner the appearances which the contacts may offer. The former consideration at least is too well understood as of paramount importance to be likely to be overlooked by any of the national committees now engaged in arranging for the most efficient observation of the transit in 1882.

VARIABLE STARS.—Minima of Algol occur by Schönfeld's formula on April 3 at 10h. 51m. G.M.T., and April 6 at 7h. 40m., and the next series observable in this country commences on May 13 at 14h. 17m.

In the uncertainty that exists with respect to the period of Ceraski's circumpolar variable, the following calculated times of minima are only to be regarded as rough indications:—

	h.	m.		h.	m.
April 3 ...	12	56	G.M.T.	April 18 ...	11 58
8 ...	12	37		23 ...	11 38
13 ...	12	17		28 ...	11 19

A constant period of 2.49326 days is here assumed. Prof. C. H. Peters publishes details of his observations of a number of new variable stars (*Astron. Nach.*, No. 2360), and Dr. Dunér notifies the variability of the red star Schj. 57 *a*, which stands thus in the *Durchmusterung*:—

	h.	m.	s.		h.	m.
9.4m. ...	R.A.	5 17 32.7		Decl.	+ 34 2.1	

This star was invisible in the Lund refractor on January 20, but was well seen on February 23; in September and October, 1878, he had confirmed its fiery-red colour, and found the spectrum of the Class III. *b*. V Herculis varies from 8m. to 12m., and the period seems to be about 290 days; the next maximum may be expected in October of the present year.

ANCIENT ASTRONOMY.—In No. 2 of the new periodical, *Urania*, is an elaborate paper by Prof. Schjellerup of Copenhagen, "Sur le Chronomètre Céleste d'Hipparque," in which he discusses the question "Comment les anciens astronomes ont-ils déterminé l'heure de la nuit, et à quelle exactitude ont-ils pu parvenir?" In this paper he has calculated by the strict trigonometrical formulæ (an investigation of which is prefixed) the positions of the forty-four stars mentioned in the third book of the only work of Hipparchus which has descended to us. His "Three Books of Commentaries on the phenomena of Aratus and Eudoxus," printed for the first time in 1567 (Lalande, "Bibliographie," p. 91) from two manuscripts of the Biblioth. Medicea and the Library of the Vatican. Petau brought out a new edition, in which he availed himself of an ancient well-written manuscript preserved in the Bibliothèque Royale, and which forms part of the third volume of his "Uranologion." Prof. Schjellerup gives the Greek text essentially after the edition of Petau, with as nearly as possible a literal translation. He concludes his paper with the remark, "Dans l'état actuel on peut prouver que les Astronomes d'Alexandrie ont pu déterminer le temps sidéral presque à une minute près." It contains the right ascensions and declinations of the stars in question for every hundredth year, from -300 to +100, with the amount of proper motion to the respective epochs, and is a production which merits the attention of those who are interested in the Astronomy of the Ancients.

THE ACADEMY OF SCIENCES, PARIS.—At the annual public sitting of the Paris Academy on the 14th inst. the Lalande Prize

was awarded to Mr. E. J. Stone, director of the Radcliffe Observatory, Oxford, for his great catalogue of southern stars, involving newly-determined places of all the stars observed by the French astronomer Lacaille during his memorable visit to the Cape of Good Hope, in the years 1751 and 1752; the observations for the catalogue having been made while Mr. Stone occupied the position of Her Majesty's Astronomer at the Cape. The commission to whom the consideration of the award was referred consisted of MM. Faye, Mouchez, Loewy, Janssen, and Tisserand, who have called attention in their Report to the "fundamental importance" of the Catalogue, in view of the study of the proper motions, &c., of the stars in the southern heavens.

At the same sitting the Valz Prize was adjudged to M. Tempel of Florence for his numerous cometary discoveries.

The Damoiseau Prize (10,000 francs) has been again proposed for 1882. It had been offered without response in 1869, 1872, 1876, 1877, and 1879; the subject on all occasions being the same and a very important one in the actual state of astronomy, viz., "To review the theory of the satellites of Jupiter, to discuss the observations and to deduce the constants which it contains, and particularly that which furnishes a direct determination of the velocity of light; and lastly, to construct special tables for each satellite."

### BIOLOGICAL NOTES

ALGÆ OF THE GULF OF FINLAND.—M. Chr. Gobi made an excursion along the borders of the Gulf of Finland in the summer of 1879 with the object of investigating the algæ of this district. In spite of the weather being of the most unfavourable character he was enabled to work out the whole south-west coast of this district, from St. Petersburg to the comparatively open sea at Hapsal. Along the southern coast of the Island of Kotlin, on which Cronstadt is built, and also along the opposite coast shore at Oranienbaum, chlorophyllaceous algæ were almost exclusively met with, and these belonging to species to be also met with in the fresh waters of the adjoining lands, for example, three distinct species of *Cladophora* (among these *C. glomerata*), several forms of the genera *Oedogonium*, *Spirogyra*, *Zygnema*, and other filamentous *Mesocarpæ*; various *Desmidiaceæ* (*Cosmarium*, *Closterium*, *Scenedesmus*), a much-branched, very fine, almost hair-like *Enteromorpha* (apparently *E. salina*), also various oscillatoriaceous forms and diatoms. Besides at Cronstadt an *Ulothrix*, more commonly in the early summer months, and a *Merismopodia* (probably *M. Kützingerii*) at Oranienbaum, the pretty *Spirulina jenneri*, amidst various *Oscillatoria*, was met with, also *Vaucheria*, and in larger quantities *Hydrodictyon utriculatum*, in the various stages of development (middle of August). About seven versts west of Oranienbaum *Tolypothrix* was met with in some quantity, forming floating ball-shaped masses. By the end of July some excursions to the environs of Hapsal led to the discovery of the interesting *Phæospore*, which up to this had only once been found by Pringsheim at Heligoland, and called by him *Streblonema*; in Hapsal Bay it lived on *Ruppia*, several *Charas*, and in company on these with *Ulothrix confervicola*, which latter grew in great abundance on these plants and on *Ceramia* and other red algæ. It is interesting to note that along with marine forms there grew some of the fresh-water filamentous algæ, such as *Spirogyra*, *Zygnema*, and in large quantities that half fresh-water species *Monostroma Balticum*. Out in the bay towards the open sea the red algæ increased in number, but the merging of the fresh-water forms into those of a truly marine type could be well studied in the Bay of Hapsal. (*Botanische Zeitung*, February 20.)

THE "BLAKE" CRUISE.—Numbers 1 and 2 of volume 8 of the *Bulletin* of the Museum of Comparative Zoology at Harvard College contain preliminary reports on the Echini collected during the cruises of the *Blake*, by Alex. Agassiz, and on the Crustacea by Alphonse Milne-Edwards, have just reached us. The report on the Echini contains descriptions of thirteen new species belonging to such genera as *Dorocidaris*, *Cœlopleurus*, *Asthenosoma*, *Phormosoma*, *Palæotropus*, and *Schizaster*. Perhaps no group of animals has received such marked additions to its ranks through the deep-sea dredging expeditions. There was a time, and that not long ago, when we remember that the prevalent idea was that in this class new species were scarcely to be expected to turn up. Alphonse Milne-Edwards' report, of which the first part only is published, treats of the Brachyurous Decapods and of a portion of the Macrura. Many new genera and species are described, and several are figured. One very re-

markable new genus, *Corycodus*, is formed to receive a somewhat mutilated example, which however exhibits characters different from any known Crustacea, belonging apparently to the family Dorripedæ. Its carapace is globular, and intimately connected to (soudée) the sternal plastron and between the insertion of the articulations of the first and those of the second pair of feet there is to be found a considerable space. Some very interesting new genera belonging to the Paguridæ are described. Among the new species of the Galatheadæ there are no less than eleven belonging to the genus *Munida*; and a new genus allied to *Munida*, *Galathodes* is described with ten new species. It is evident that the number of species belonging to the Crustacea have been very largely increased by the deep-sea exploration carried on by the United States Coast Survey-steamers *Blake*.

FOOD OF BIRDS, FISHES, AND BEETLES.—The State Legislature of Illinois authorised at its last session an investigation of the food of the birds of the State, with especial reference to agriculture and horticulture, and a similar investigation of the food of the fishes, with especial reference to fish-culture. As a result several Bulletins have been issued from the State Laboratory of Natural History, of which the last just received (No. 3) contains a report on the food of fishes by S. A. Forbes, the director of the Laboratory, the class especially reported on being the Acanthopteri, and another on the food of birds by the same. A very interesting series of notes on the food of predaceous beetles, by F. M. Webster, is added. Many species are proved to be vegetarians, sometimes doing the growing crops a good deal of mischief.

PHYSIOLOGICAL SIGNIFICANCE OF TRANSPIRATION OF PLANTS.—Prof. Weiss concludes from experiments (Vienna Acad. *Anz.*) that transpiration is only prejudicial to the functions of plants, excepting the process of lignification of the cell-walls, which it favours; hence it is to be regarded as a necessary evil for plants. Prof. Weiss also obtains striking evidence in favour of Wiesner's theory of heliotropism; and he seeks to prove that through transpiration certain inorganic constituents of the ground are carried to plants in excess, and are got rid of on the fall of leaves in autumn, and consequently that transpiration is also the cause of the influence exercised by the nature of the ground on the quantitative composition of the ashes of plants. The view that the stronger growth of non-transpiring plants is due to mere expansion of cells without simultaneous over-production of organic substances, is controverted.

SIGNS OF DEATH.—Observations with regard to the last manifestations of life in animals variously killed have been lately made by Drs. Verga and Biffi (*Real. Ist. Lomb. Rend.*). The following conclusions are arrived at:—1. in the higher animals, when sensibility, circulation, and respiration have ceased, the life of histological elements of the nervous centres, especially of the ganglionic system and the spinal cord, remains for a short time. 2. Contraction of the pupil and of the spleen are effects of this reduced latent life, and more remarkable effects, in guinea-pigs, rabbits, and cats, are the constant and uniform movements of inward curvature, which have the significance of respiratory efforts, presented under like conditions by the dog and the ass. 3. These movements appear in the animals whether drowned in water, or hung, or bled to death. 4. They indicate the point beyond which the organism loses the power of recovery.

CLASSIFICATION OF STATURES.—In view of the increasing need of exactness in anthropological descriptions, Prof. Zoja has lately proposed in the Lombard Institute a system of classification of human statures. He first constitutes three divisions, denoting by the terms *mesosoma*, *megasoma*, and *microsoma*, medium, high, and low stature respectively. At the ends of the series are added divisions for gigantic and dwarfish statures, *gigantosoma* and *nanosoma*. Each of these five classes is divided into three parts, on this plan: *medium mesosoma*, *hypermesosoma*, and *hypomesosoma*. To attach numerical values to all these fifteen divisions is more difficult. The author makes 2'00 metres the division between very high and gigantic stature, and *gigantosoma* ranges from that point up to 2'51 m. or more (*hypergigantosoma*). On the other hand 1'25 m. is made the limit between very low and exceptionally low stature; and *nanosoma* ranges from this to 0'74 or less (*hyponanosoma*). Medium stature (or *mesosoma*) ranges from 1'60 m. to 1'70 m.

EQUUS PRJEVALSKI.—The St. Petersburg Geographical Society has just published a pamphlet, by M. Poliakov, on the